Series 1927 Number 16

UNITED STATES DEPARTMENT OF AGRICULTURE

Soil Survey
of
The Jerome Area, Idaho

By

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and

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University of Idaho

Bureau of Chemistry and Soils

In cooperation with the
University of Idaho College of Agriculture
and Agricultural Experiment Station

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SOIL SURVEY OF THE JEROME AREA, IDAHO

By E. N. POULSON, U. S. Department of Agriculture, in Charge, and J. A. THOMPSON, University of Idaho

AREA SURVEYED

The Jerome area, Idaho, lies totally within Jerome County and includes practically all the irrigated and irrigable agricultural land of the county. Snake River forms the southern boundary of both the county and the area. The area surveyed lies midway between Boise, the capital of the State, and Pocatello, the Gate City of southeastern Idaho. It includes an area of 271 square miles, or 173,440 acres.

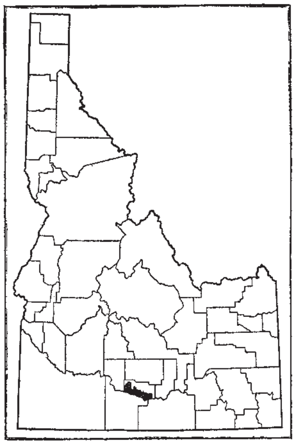

FIGURE 1.—Sketch map showing location of the Jerome area, Idaho

The Jerome area forms a part of the great intermountain valley of southern Idaho known as the Snake River Plain, which is of semicircular form and follows the course of Snake River across the State. The area surveyed lies just north of the river and extends from east to west a distance of 32 miles. It is irregular in shape, and its north and south dimension varies from about 4 miles along the eastern boundary near Milner, to about 15 miles near Jerome in the western part. The agricultural parts lie mainly within borders of a lava desert having very shallow soils and extensive areas of scab land or barren lava flow, a spur of which extends across the area from the north to Snake River and divides the agricultural lands into east and west sections.

The slope of the plain as a whole is south and west to Snake River. The relief is rather rolling, though some parts of the area are comparatively flat and smooth. Several large rounded buttes lie within and immediately outside the area. The slopes of these hills are steep and dissected. The average elevation of the area is nearly 4,000 feet above sea level, and the buttes rise much higher. At Milner Dam in the extreme eastern part, the diversion point of the gravity canal flow for irrigation of the area, the elevation is 4,097 feet. North of this point the land rises to a greater elevation.

Snake River is the only perennial stream, and, for the most part, flows several hundred feet below the general land level in a box canyon between precipitous basalt cliffs. So abrupt is the break that the river and canyon are hardly discernible until reached. Snake River drops several hundred feet, in a series of falls and rapids, from the head of the canyon at Milner to the point where it leaves the area. The falls, especially Twin Falls and Shoshone Falls, are of both

hydroelectric and scenic value. The intermittent tributary streams, locally known as coulees, have worn no bedrock channels and flow in waterfalls over the canyon walls. They have a general southward trend. In many places they have cut through to the basalt bedrock and, owing to the broken, fissured type of basalt, the run-off is released through underground channels. This characteristic has proved especially valuable with the advent of irrigation, and areas affected by seepage and alkali accumulation are very few. However, in a few places the basalt ridges obstruct drainage, and in such basins the soils are slightly heavier, owing probably to sedimentation.

Jerome County was organized from parts of Gooding, Lincoln, and Minidoka Counties in 1919. Settlement began as early as 1907 when the Twin Falls Northside Land & Water Co. opened the large Carey Act project of which the area is a part. Previous to this the country was a sagebrush desert.

The population consists mainly of native-born Americans from Eastern and Middle West States. In 1920, Jerome County had a population of 5,729, all classed as rural as there were no towns of more than 2,500 inhabitants. Practically all the people of the county live within the area surveyed. The distribution of the population for that year is given as 9.5 persons to the square mile. Probably one-third of the population resides in the towns.

Jerome, the largest town and the county seat of Jerome County, is the chief trading center and shipping point in the western part of the area. In 1920 it had a population of 1,759. Eden and Hazelton are trading centers and shipping points for the eastern part. All these towns are located on a branch line of the Oregon Short Line Railroad (Union Pacific system) which runs east and west through the area.

A State highway running east and west through Eden and Hazelton and north from Jerome, serves as a trunk transportation road. Another graveled highway runs south from Jerome and connects with Twin Falls, 14 miles to the south, crossing Snake River Canyon. Other graveled roads branch from these trunk roads. In the irrigated parts of the area graded dirt roads traverse most of the section lines. The graveled roads are for the most part in good condition throughout the year; but many of the dirt roads become deeply rutted and dusty in summer and muddy in winter.

The farm products are shipped from the area principally by railroad. Only a small part is consumed within the area, the principal local market being Jerome. Most of the alfalfa hay is fed to beef and dairy cattle and to sheep which are driven in from the range for winter feeding. A part of the corn grown is fed as silage to dairy cattle.

Beef cattle, hogs, and sheep find a market at Pacific coast and mid-western points; most of the wool is shipped east; dairy products are shipped to points in Idaho and adjoining States; and poultry products are shipped principally to Pacific coast markets.

Wheat, potatoes, and beans are shipped to the Pacific coast and mid-west markets and often to eastern markets. Clover and alfalfa seed generally find mid-western markets. Sugar beets are hauled or shipped to the sugar factories at Paul, Minidoka County, and Burley, Cassia County. Other farm products are, for the most part, consumed locally.

Good graded schools are located in all the towns and outlying districts, and high schools are at Jerome, Hazelton, and Eden. In the rural districts transportation is furnished to and from the main schools by autobus. All the towns are served with telephones and electricity.

CLIMATE

The climate of the Jerome area is characterized by a rather wide range of temperature, dry atmosphere, and light annual precipitation. The summers are rather hot, but, owing to the dryness of the atmosphere, are rarely oppressive. The winters are, in general, rather mild and open, though periods of low temperature occur fairly frequently. The proportion of sunshiny days is large. The prevailing winds are from the west and southwest. Strong winds prevail in both spring and fall, but rarely does the wind attain dangerous velocity. Dust storms are frequent in early spring.

Table 1, compiled from the Weather Bureau records at Jerome, gives the more important climatic data for the area.

TABLE 1.—*Normal monthly, seasonal, and annual temperature and precipitation at Jerome, Idaho*

[Elevation, 3,893 feet]

Month	Temperature, mean	Precipitation		
		Mean	Total amount for the driest year (1926)	Total amount for the wettest year (1923)
	°F.	Inches	Inches	Inches
December	29.1	0.97	1.10	1.08
January	26.5	.96	.46	1.05
February	31.5	.97	.82	.10
Winter	29.0	2.90	2.38	2.23
March	38.6	.77	.29	.21
April	47.0	1.00	.54	1.35
May	56.7	.84	.19	1.30
Spring	47.4	2.61	1.02	2.86
June	64.8	.50	.03	1.03
July	73.7	.15	.52	.08
August	70.8	.28	.15	.27
Summer	69.8	.93	.70	1.38
September	60.3	.37	.04	1.37
October	50.3	.90	.25	2.02
November	38.3	.91	1.91	.27
Fall	49.6	2.18	2.20	3.66
Year	49.0	8.62	6.30	10.13

The precipitation is fairly well distributed in fall, winter, and spring when the amount is more than in the summer.

The average frost-free season at Jerome is 138 days, from May 18 to October 3. However, killing frosts have occurred as early as September 13 and as late as June 19. Early and late frosts occasionally damage fruits, beans, and other vegetables.

AGRICULTURE

Agricultural development in the Jerome area dates from 1907 when the Twin Falls Northside Land & Water Co. opened the tract embracing the irrigable lands of the area to entry under the Carey Act. The first stage in the development from the sagebrush desert (pl. 1, A) was to clear the land of sagebrush and level and ditch the land for the utilization of irrigation water which became available in the next few years. In 1920 the census shows 19.7 per cent of Jerome County in farms. The agricultural part of the county lies chiefly within the area surveyed, therefore the figures given for the county are applicable to the area, as the larger part of the county, constituting some 50 per cent or more of its total area, outside the boundaries of the present survey, is nonirrigable at present. In 1920 the farms averaged 111.7 acres in size, of which 81.4 per cent was improved land. The high proportion of waste land to the farm is owing to the large area of scab land and of basalt outcrops over the greater part of the area.

The first crops grown were mainly alfalfa hay and cereals, chiefly wheat. The growing of alfalfa brought the land to full production as the nitrogen stored by this crop was the only plant food seriously lacking. Other crops, which showed greater financial returns were then substituted and many changes to various cash crops have taken place during the project development. Sugar beets, potatoes, apples, beans, and clover and alfalfa seed are among the cash crops now grown. Dairying, livestock raising, and poultry raising are of secondary importance. Much of the hay is fed to range sheep as high freight rates have prohibited its shipment to outside markets. The production of subsistence crops has remained about the same.

In 1920 the value of all livestock in the county was $2,154,377; of hay and forage, $1,330,054; of cereals, $1,137,736; of other grain and seeds $58,021; of vegetables, $118,198; of fruits, $121,886; and of all other crops, $19,320. Dairy products were valued at $97,787, poultry and eggs at $657,857, and wool at $108,029.

The 1920 census summarizes the important crops for 1919. The largest acreage, 22,329 acres, was devoted to alfalfa. Small acreages were devoted to clover and corn silage. The total hay production was 60,745 tons. Wheat ranked next in acreage to alfalfa with 20,919 acres yielding 524,768 bushels; oats produced 39,428 bushels on 1,697 acres; and barley 11,957 bushels on 458 acres. A very small amount of corn and rye was grown. There were 330 acres of potatoes yielding 42,366 bushels; and 542 acres of sugar beets yielding 1,840 tons. Orchard fruits include apples, plums and prunes, peaches, cherries, and pears. Some grapes, strawberries, and raspberries are grown.

At present (1927) alfalfa for hay leads in acreage. It yields from 2 to 6 tons to the acre, averaging about 4 tons. It is fed to farm animals, range cattle, and sheep. Some alfalfa is grown for seed and yields from 3 to 25 bushels to the acre. Grimm is the principal variety of alfalfa. Red clover also is grown for seed, yielding from 5 to 15 bushels to the acre. Of the cereals, spring wheat is the most important, and yields range from 20 to 90 bushels to the acre. Dicklow and Federation are the favorite varieties. Some of the wheat is consumed locally but most of it is shipped to Pacific coast and mid-west markets. Corn, barley, and oats are less important

and are consumed mainly on the farms. Corn yields from 20 to 70 bushels to the acre, and when cut for silage produces from 8 to 16 tons; barley yields from 30 to 100 bushels; and oats from 35 to 120 bushels. Beans, mainly of the Great Northern variety, are extensively grown and shipped out as a cash crop. Yields ranging from 15 to 45 bushels are obtained. Potatoes, grown both for home consumption and as a cash crop, yield from 100 to 500 bushels to the acre, and sugar beets, also a cash crop, yield from 5 to 20 tons. Truck gardening shows promise, but as yet the acreage devoted to truck crops is small.

Dairying is carried on, especially on the lighter types of soil. Much of the raw milk is sold to a cooperative creamery at Jerome. Sheep, cattle, hogs, and poultry are raised to some extent. The livestock industry consists mainly of the feeding of range sheep during the winter.

The farmers recognize the fact that leguminous crops must be grown in order to establish and retain soil fertility, as nitrogen and organic matter are lacking in arid soils. The crops mentioned in this report are the ones recognized as being especially adapted to the soils of the area. Various rotations, including leguminous crops, such as alfalfa, red clover, and some other clovers, are practiced. Wheat, other small grains, or potatoes generally follow the hay crops. These, in turn, may be followed by sugar beets, beans, or other crops. Some farmers plant the last-mentioned crops directly after breaking up the hay land. Wheat and other small grains are used extensively as nurse crops for alfalfa and clover.

Corn is grown most extensively on the lighter-textured loamy fine sands and fine sands, as it withstands the drifting sands in early spring better than other crops. Because of the large tonnage of silage obtainable, dairying is carried on by many farmers in conjunction with corn production. This procedure is to be recommended, as the soil fertility is retained and much-needed organic matter is added. Wheat is seldom grown on such soils, because the yield is appreciably lower than on the heavier-textured soils. The growing of alfalfa seed on these lighter-textured soils is proving profitable, and alfalfa is a promising crop for the development of the sandy areas. Once a stand has become established, it withstands the shifting of sands very well and adds much needed organic matter during the progress of its growth.

Commercial fertilizers are rarely used, barnyard manure being the only source of fertilizer in common use. Little attention, however, is given to its conservation and use. Straw stacks and stubble are frequently burned.

The farms range in size from 40 to 160 acres, though a few are smaller, and some comprise 320 or more acres. The average acre value in 1920 was $153.48. Uncultivated land is still available at reasonable prices. Highly developed specialized farms are held at prices ranging from $150 to $300 an acre, depending on location, productiveness of the land, freedom from rock outcrop, soil depth and texture, and relief. Areas of drifting sand and rock outcrop have little value.

In 1920 the average value of all property was $22,083 to the farm. Of this, 77.6 per cent was represented by land, 8.8 per cent by buildings, 4.5 per cent by implements, and 9.1 per cent by domestic ani-

mals. In general the buildings and farm equipment are good. Horses and mules are the main sources of power, though power machinery is used on some of the larger farms. Farm machinery is essential in the cultivation and harvesting of the numerous cash crops and is generally of good quality. A few purebred animals are kept, but most of them are grades.

Most of the farm laborers are Americans. The cheaper Mexican labor is employed in beet fields which are generally worked under contract. During harvest, some transient labor is available, though much exchange of labor takes place between farmers at this time.

According to the 1920 census, 71.7 per cent of the farms were operated by owners, 25.4 per cent by tenants, and 2.9 per cent by managers. Cash rent is sometimes paid, though more commonly share systems giving from one-third to three-fifths of the crop to the owners is practiced. The proportion received by the owner depends on his investment and the kind of crops grown.

SOIL SERIES AND TYPES

The soils in the Jerome area are all comparatively mature because they all lie in an upland territory and their development has not been retarded by restricted drainage or other environmental influences. Organic-matter content is the chief factor influencing color in the surface soils. The area lies in an arid region with low annual precipitation, so that the soils are low in organic matter and hence of very light color. They contain a high amount of all plant foods, except nitrogen.

Although the soils of the area are derived from similar parent materials, have developed under a fixed set of climatic conditions, and are very similar in color and profile, the predominant soils have been classified into two series differing in character of the deeper layers or horizons. These differences are probably owing to differences in stage of development. These series have been designated as the Portneuf and the Minidoka series, both of which are extensive and have been mapped and described in adjoining soil surveys of the Twin Falls [1] and Minidoka [2] areas.

The soil series are subdivided into soil types on the basis of textural differences, or the comparative coarseness and fineness of the materials of the surface soils, and are described as sand, fine sandy loam, loam, and silt loam. The soil type is the unit of soil mapping. Minor variations within the soil type which depart from the typical development, such as eroded or shallow areas, steep areas, or areas containing an abundance of gravel, stone, or rock outcrop, are designated as phases.

In the three series of soils recognized in the Jerome area eight types with seven phases have been differentiated on the soil map. In addition two classes of miscellaneous materials, scab land and rough stony land, which have little or no agricultural value, are mapped.

Soils of the Portneuf series have smooth friable light-brown surface soils extending to a depth of a few inches, where a rather abrupt

[1] BALDWIN, M., and YOUNGS, F. O. SOIL SURVEY OF THE TWIN FALLS AREA, IDAHO. U. S Dept. Agr., Bur. Soils, Field Oper. 1921. Rpt. 41, p. 1367–1394, illus. 1925.

[2] YOUNGS, F. O., BALDWIN, M., KERN, A. J., and McDOLE, G. R. SOIL SURVEY OF THE MINIDOKA AREA, IDAHO. U. S. Dept. Agr., Bur. Chem. and Soils, Series 1923, Soil Survey Rpt. 27, p. [859]–902, illus. 1928.

change takes place to a definitely darker-brown or more reddish-brown horizon of more compact character and heavier texture. At an average depth of about 15 inches lies a well-marked horizon of lime accumulation of very light-gray color, very compact, in many places nodular, and hard and brittle, but typically without definite cementation into impervious lenses or layers. This horizon usually ranges in thickness from 15 to 25 inches. It is underlain by a horizon of light grayish-brown or light yellowish-brown material which is friable but in some places slightly compacted. It is of lower lime content than the horizon above. The basalt bedrock lies at variable depths, in many places occurring within 6 feet of the surface and in a few places outcropping. Much of that part lying beneath the soil covering is coated with a fragmental lime-carbonate deposit.

Soils of the Minidoka series differ from the Portneuf soils only in the lower subsoil layer. Here the zone of lime accumulation has become concentrated and solidified to form impervious cemented hardpan layers or sheets. These may occur singly with an average thickness of a foot or so, or may occur as several layers with loose layers of gray highly calcareous material between. In places the hardpan layers are underlain by well-rounded gravel coated with lime-carbonate crusts. The surface soil of the Minidoka soils is generally sprinkled with lime-carbonate hardpan fragments and nodules, and in many places the plates or sheets lie at slight depth or protrude at the surface, especially where some erosion has taken place.

In the Jerome area the Portneuf and Minidoka soils are so closely related and closely associated that in many places they merge or grade imperceptibly into one another. In such localities soil boundaries are necessarily more or less arbitrarily drawn.

Soils of the Winchester series consist typically of loose, porous sandy materials made up of an admixture of light-colored quartz and dark-colored basaltic particles which have a characteristic pepper and salt color when examined in detail. The soils are of wind-blown hummocky or dunelike relief and have little profile development. They are inextensive and not typically developed in the Jerome area.

Scab land includes areas of basaltic lava flow with only occasional shallow patches of soil or no soil covering. Rough stony land includes areas of basalt escarpments, and rim rock and steep rocky talus slopes of the Snake River Canyon.

In the following pages of this report the different soils of the Jerome area are described in detail and their agricultural importance is discussed; the accompanying soil map shows their distribution; and Table 2 gives their acreage and proportionate extent.

TABLE 2.—*Acreage and proportionate extent of the soils mapped in the Jerome area, Idaho*

Type of soil	Acres	Per cent	Type of soil	Acres	Per cent
Portneuf silt loam	39,424	37.1	Winchester fine sand	1,856	1.1
Rock-outcrop phase	22,848		Minidoka silt loam	8,896	5.4
Steep phase	2,112		Steep phase	448	
Portneuf fine sandy loam	5,760	11.6	Minidoka fine sandy loam	1,536	.9
Rock-outcrop phase	14,272		Minidoka loamy fine sand	2,048	1.2
Steep phase	192		Minidoka fine sand	768	.0
Portneuf loamy fine sand	256	4.1	Scab land	55,424	32.4
Rock-outcrop phase	6,848		Rough stony land	2,624	1.5
Portneuf fine sand, rock-outcrop phase	8,128	4.7	Total	173,440	

PORTNEUF SILT LOAM

Portneuf silt loam lies in the typical upland parts of the area surveyed and has undergone comparatively complete development. In the virgin condition the surface material consists of a 2½ or 3 inch layer of smooth-textured friable light-brown or light grayish-brown silt loam containing a high proportion of very fine sand. When dry the surface layer is slightly crusted over, the crust being very thin, soft, fragile, and checked into geometric blocks. (Pl. 1, B.) Beneath this layer and continuing to an average depth of about 15 inches, is slightly darker-brown or slightly reddish-brown silt loam, very smooth and somewhat heavier textured than the layer above. It is compacted and slightly plastic when wet. There is a distinct tendency to columnar cleavage evidenced by vertical cracks. In general, none of the above horizons is calcareous, but they are underlain by a horizon of high lime accumulation consisting of light yellowish-gray, almost grayish-white, heavy silt loam or silty clay loam which is of granular, nodular, or somewhat irregular nut structure in the upper part and in the lower part is very compact with a somewhat horizontal cleavage. At an average depth of about 40 inches the material changes through a slightly netted lime-seamed transitional layer to unmodified yellowish-gray, somewhat creamy, silt loam or very fine sandy loam which is smooth, mellow, and floury, though there is some compaction in the upper part of the layer. This zone is highly calcareous though less so than the layer above.

The greatest development of the typical soil is in the eastern part of the area. In the western part the soil contains less very fine sand and more coarser-textured material which has drifted in from encroaching wind-blown sand from the surrounding sandy soils, so that when the subsurface layer of heavier material becomes mixed with the surface layer by plowing, the texture approaches loam. Here the subsurface layer is heavier and more reddish brown, and the zone of lime accumulation is less compact.

Areas of Portneuf silt loam range from comparatively smooth and gently sloping to undulating, rolling, and even steeply sloping in the vicinity of the buttes. The steeper areas have been differentiated on the map as a steep phase. Surface drainage is well developed, as drainage channels are usually well defined and the fissured nature of the basalt bedrock aids in the removal of subsurface water. There is practically no accumulation of alkali. The water-holding capacity of the soil is very good.

Probably 80 per cent of the land is irrigated and under cultivation. Irrigation water is raised by pumping well above the gravity flow, but some of the land is above this source of supply. The largest uncultivated area includes Wilson Butte in the extreme eastern part of the area.

The important crops grown and to which the soil is well adapted are alfalfa and clover, both for hay and seed, wheat, barley, potatoes, sugar, beets, beans, corn, and apples. Alfalfa occupies a greater proportion of this land than any other crop. It is followed by wheat, potatoes, beans, and sugar beets in about equal acreages.

Alfalfa yields from 3 to 6 tons of hay to the acre, averaging about 4 tons. An average yield of alfalfa seed is about 8 bushels to the acre and of red-clover seed is about 6 bushels. Wheat yields as high as 90 bushels to the acre though the average is about 45 bushels, barley from 50 to 100 bushels, potatoes average around 250 bushels ranging from 200 to 500 bushels, beans average about 30 bushels, sugar beets probably average 10 tons, and corn averages about 50 bushels. When cut for silage, corn yields from 8 to 15 tons to the acre. Onions and hardier truck crops give promise of becoming profitable.

The winter feeding of range sheep is carried on, and dairying is engaged in rather extensively. Hog, sheep, and cattle raising are practiced, generally on a small scale. Poultry raising is a promising industry.

Portneuf silt loam, rock-outcrop phase.—This phase of Portneuf silt loam includes areas dominated by uniformly shallow soils and those of variable depth dominated by rock outcrop. The irregular surface of the underlying broken and uneven basaltic lava substratum results in many outcrops, especially in the western part of the area. This gives rise to one of the most variable features in the soils of the area especially those of the Portneuf series. The phase includes areas where the outcrops are numerous or where the bedrock substratum closely approaches the surface as evidenced by calcareous fragments of the lime-coated basalt substratum and by rock fragments themselves. Owing to the irregular and abrupt character of the outcrops, the soil immediately surrounding them may be just as deep as the typical soil, but they render the surface rather broken and uneven for successful irrigation and interfere with moisture retention, drainage, and various factors of cultivation. All these factors tend to influence the selection of crops and their acre yields. Land of this kind is less valuable than typical Portneuf silt loam.

The rock-outcrop phase is widely distributed, occurring in association with typical Portneuf silt loam, mainly in the central and western parts of the area. The largest areas are in T. 8 S., R. 18 E. As mapped this soil includes severely eroded areas having heavy distribution of both outcrop and fragmental rocks. The included areas occur mainly on the slopes of Skeleton Butte which occupies most of sec. 4, T. 10 S., R. 19 E.

Portneuf silt loam, steep phase.—The steep phase of Portneuf silt loam includes the more rolling areas of Portneuf silt loam in the eastern part of the area, which occupy comparatively narrow strips of the steeper slopes along drainage channels and the steeper sides of the buttes. The soil profile is similar to that of typical Portneuf silt loam, except that the surface soil may be thin or somewhat eroded and in many places is lighter gray and sprinkled with lime-carbonate nodules and fragments derived from the compacted and softly cemented, nodular calcareous subsoil. The soil is comparatively free from stone or rock outcrop. The total acreage is small.

Land of this kind is, in general, inferior to the typical soil especially as regards crop selection and difficulty of irrigation. Yields are materially less on these steep areas.

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PORTNEUF FINE SANDY LOAM

Portneuf fine sandy loam is second of the Portneuf soils in importance and is associated with Portneuf silt loam and its phases in the upland areas. It has undergone similar soil development as the silt loam. The surface soil consists of light-brown friable mellow fine sandy loam to a depth of about 8 inches. It contains a small amount of coarser sands and basalt fragments. Beneath this is a layer, about 1 foot thick, of light yellowish-brown or slightly reddish-brown heavy fine sandy loam which is more compact than the surface soil and very plastic when wet. This layer is underlain at an average depth of about 20 inches by the zone of lime accumulation, which consists of light yellowish-gray or gray plastic heavy fine sandy loam or very fine sandy loam of high lime content. The material is not so compact as in the corresponding layer of Portneuf silt loam, but it is brittle and of rather irregular nut or nodular structure with lime seaming. Below this layer, at a depth of about 3 feet, is the unmodified subsoil of light yellowish-brown or grayish-brown fine sandy loam or loamy fine sand. The upper part of this layer represents a rather indefinite transitional zone of lime staining and seaming. The bedrock is similar to that in other Portneuf soils.

This soil occurs chiefly in the western part of the area. Small scattered bodies are in the eastern part, in the vicinity of Snake River, and a small body occurs on the eastern slope of Skeleton Butte. In this general region Portneuf fine sandy loam is spotted in many places with small areas of heavier texture, owing to the occurrence at a slight depth of the original Portneuf silt loam profile which underlies the encroaching sandy materials. This is especially true in the western part of the area, where this soil joins with the silt loam of the series. In most areas the soil material is a remarkably uniform fine sandy loam. Along the western boundary of the area, where the soil is associated with Portneuf loamy fine sand and Portneuf fine sand, rock-outcrop phase, the sandy materials occurring in the typical surface soil increase in quantity, producing a grittier, coarser texture, and in places this soil approaches a sandy loam. A narrow belt of such soil cuts across the northwestern part of the area in the vicinity of Pleasant Plains and Grandview Schools.

The relief of Portneuf fine sandy loam is similar to that of Portneuf silt loam. The soil is equally well drained, and its profile is equally well developed.

The greater part of the land is under cultivation. Crop adaptations and yields are similar to those on Portneuf silt loam.

Portneuf fine sandy loam, rock-outcrop phase.—The rock-outcrop phase of Portneuf fine sandy loam is almost identical in character and agricultural importance to the rock-outcrop phase of Portneuf silt loam, but it has a fine sandy loam texture.

Land of this kind is extensive and of widespread occurrence in the western and central parts of the area. A conspicuous body occurs in the southeastern part near Snake River.

Portneuf fine sandy loam, steep phase.—The steep phase of Portneuf fine sandy loam is represented by a single body lying on the eastern slope of Skeleton Butte. Here the land is steeply sloping and difficult to irrigate, and it is consequently of lower agricultural

value than typical Portneuf fine sandy loam. Most of it is uncultivated.

PORTNEUF LOAMY FINE SAND

The surface soil of Portneuf loamy fine sand is light-brown loose mellow fine sand, to a depth of about 12 inches, in which coarser sand particles and basaltic rock fragments are discernible. Below this is a layer of light yellowish-brown or slightly reddish-brown fine sandy loam which is compacted and of cloddy structure. At a depth of about 2 feet the zone of lime accumulation, consisting of very light yellowish-brown or yellowish-gray plastic heavy fine sandy loam or silt loam, is reached. The material in this layer is not so compact as in corresponding layers of the silt loam and fine sandy loam members of the Portneuf series, and it also has less concentration of lime. It is underlain at a depth of about 40 inches by the generally unmodified light yellowish-brown heavy fine sandy loam or silt loam. There is some lime infiltration in the upper part of this layer, otherwise it continues unmodified to bedrock.

This soil, which covers a total area of about one-half square mile, occurs only in the western part of the area. Together with its rock-outcrop phase, it ranks next in agricultural importance to Portneuf fine sandy loam, the major part being under cultivation. Because of its small extent its agricultural adaptations are discussed under the description of the rock-outcrop phase.

Portneuf loamy fine sand, rock-outcrop phase.—Most of the Portneuf loamy fine sand is represented by the rock-outcrop phase which covers an area about one-half as large as the rock-outcrop phase of Portneuf fine sandy loam. It occurs mainly in the southwestern part of the area where the surface soil breaks away more rapidly to the exposed basaltic lava flow along the river and therefore the areas are more broken by outcrops than similar phases of the silt loam and fine sandy loam members of the Portneuf series. The soil occurs in association with the rock-outcrop phase of Portneuf fine sandy loam, representing a transition between Portneuf fine sand and Portneuf fine sandy loam. The broken surface is especially conducive to deposition of encroaching wind-blown sands, and the texture in many places is variable and rather patchy, ranging from light fine sandy loam to fine sand or even loamy sand.

There is also considerable variation in the depth to and the character of the substratum, but the subsoil in most areas is of heavier texture and the water-holding capacity is nearly as good as that of Portneuf fine sandy loam. The generally sloping surface is conducive to good drainage, and the major drainage channels, or coulees, are well defined, and only where drainage is interrupted by ridges of basalt or outcrops is it seriously impeded. However, in such areas the porous nature of the basaltic substratum usually prevents serious drainage difficulties.

The agricultural value and crop adaptation of this soil are limited mainly by the occurrence of areas of drifting sands, the frequency of outcrop, and the rather loose surface soil, but in general there is enough binding material in the surface soil to render it resistant to all but the heaviest winds. The chief requirement in its cultivation is control of the encroachment of drifting sands from near-by areas

of Portneuf fine sand, rock-outcrop phase, and Winchester fine sand, with which soils it is associated in many places.

Except for the sandier, wind-drifted areas, the greater part of this soil is under cultivation. On the better areas the range of crops is equal to that for Portneuf fine sandy loam. Yields, except of alfalfa and corn, are generally less than on the heavier soils. As with the rock-outcrop phases of the other Portneuf soils, the extent and frequency of the outcrops have a direct bearing on crop yields.

Potatoes average about the same as on Portneuf fine sandy loam, about 250 bushels to the acre. Bean yields are slightly lower than on the fine sandy loam, probably averaging 25 bushels, and beets yield from 5 to 15 tons. Wheat and barley yields are materially reduced on this soil, and only a comparatively small acreage is planted to these crops. Corn does well, and yields average higher than on the heavier soils, about 55 bushels to the acre. A large acreage is devoted to corn which withstands the drifting of the sands better than any other crop. Corn from a large acreage is cut for silage and fed to dairy cattle. As corn on this soil yields from 10 to 16 tons of silage to the acre, dairying is a promising industry.

The production of alfalfa seed gives promise on this soil as this crop is not seriously endangered by the drifting sands. Yields averaging about 8 or 10 bushels to the acre are obtained.

PORTNEUF FINE SAND, ROCK-OUTCROP PHASE

The rock-outcrop phase of Portneuf fine sand is the only representative of Portneuf fine sand in the Jerome area. In places where the soil is deep and the profile well developed, the surface soil consists of about 14 inches of loose, mellow light-brown or brown fine sand. A larger proportion of coarser sands and basalt fragments occurs in this soil than in either Portneuf fine sandy loam or Portneuf loamy fine sand. The surface soil overlies a layer of yellowish-brown or slightly reddish-brown fine sandy loam, having a rough, gritty appearance, which is compacted and of soft cloddy structure. The underlying lime zone is less pronounced than in the other Portneuf soils. It lies at a depth of about 26 inches and is light reddish-brown or grayish-brown plastic fine sandy loam or very fine sandy loam, with white lime mottling or seaming. The material crumbles readily on pressure though it is well compacted and softly cemented. This material changes through a faintly lime-seamed transitional layer, lying at a depth of about 46 inches, to a looser, unmodified layer of very light grayish-brown or brownish-gray fine sand or loamy fine sand which is highly calcareous and contains some coarser sands and basalt fragments. The material is slightly compacted but breaks readily with pressure. It continues to bedrock.

Areas of this soil occur chiefly in the extreme southwestern corner of the area. A few small bodies are southeast of Jerome and near the northwestern boundary of the area. The surface material has been distributed and sifted by the prevailing westerly winds and a certain amount of segregation and assorting of material has taken place. In the western part of the area the materials average somewhat coarser in texture, and toward the east the material is a remarkably uniform textured fine sand. Much of this soil has a sprinkling of basalt fragments of various sizes at the surface and in some

places throughout the soil. The basalt bedrock outcrops in many places as in the other rock-outcrop phases of the Portneuf soils. Many of these are very thinly covered with sand, though their influence on the relief is readily noticeable.

This soil is of less agricultural importance than its area indicates. In the past the cultivated acreage has been larger than at present. In its virgin condition drifting was prevented by the natural vegetation of sagebrush and grasses, but when large acreages were cleared and plowed, shifting and drifting of the sand was intensified.

At present only the better areas, which are not so loose and shifting, are cultivated. Fair yields are obtained owing to the heavier-textured subsoil which is more retentive of moisture. The main crops are alfalfa, for hay and seed, and corn, for grain and silage. Alfalfa hay averages 3 tons to the acre and corn about 35 bushels. The land is suited to the production of alfalfa seed, of which an average of about 8 bushels an acre may be expected. Grimm is the principal variety grown.

Great difficulty is experienced with all crops in obtaining a stand in the shifting sand during the spring. The seeding of alfalfa is the most difficult and entails considerable expense.

WINCHESTER FINE SAND

The surface soil and subsoil materials of Winchester fine sand are typically rather dull brown or dark grayish brown when viewed in the field, but when samples are examined in detail they show a pepper-and-salt admixture of light-colored quartz and dark-colored basaltic particles in various proportions.

In their typical development both surface soil and subsoil materials are loose and lack definite layers of compaction, pronounced accumulation of lime, or fine-textured materials. However, in the Jerome area, the soil is not well developed, and much of it overlies or grades strongly in profile characteristics toward Portneuf fine sand, rock-outcrop phase.

The relief is hummocky or dunelike. The soil is of loose shifting character, low water-holding capacity, and would be difficult and expensive to irrigate. It would blow badly if cleared and leveled and is consequently of little agricultural importance.

Areas of this soil occur in the western and southwestern parts of the area in association with Portneuf fine sand, rock-outcrop phase. The soil is not very extensive.

MINIDOKA SILT LOAM

Minidoka silt loam is the most important soil of the Minidoka series. It is a typical well-drained upland soil having a mature profile. Its relief is similar to that of Portneuf silt loam with which it merges in most places.

The surface material is light-brown or light grayish-brown smooth friable silt loam to a depth of about 3 inches and in its virgin state closely resembles the surface soil of Portneuf silt loam. Underlying this layer is a 12-inch layer of richer light-brown heavier silt loam or silty clay loam of somewhat columnar structure. The line of demarcation between this layer and the one above is

distinct. In virgin areas none of the above horizons is calcareous. At an average depth of about 14 inches is the zone of lime accumulation which consists typically of a light-gray or grayish-white calcareous hardpan lying irregularly and indefinitely in nodular or sheetlike layers or plates one above the other, with alternating interstitial layers of loosely cemented sands and angular gritty calcareous materials. (Pl. 2, A and B.) In many places these materials have a red cast and many of the associated sheets of hardpan have red rust iron-stained surfaces. At an average depth of 3 feet, in places deeper, the hardpan may change to uncemented calcareous materials of thin sheets to an extreme development of single thick limestone-sands with gritty calcareous inclusions. Where the coarser calcareous materials approach gravel and stone in size, they show, in many places, subangular or rounded surfaces caused by abrasion. These materials are light yellowish brown, light yellow, or brownish gray.

Very little of the surface soil remains undisturbed, consequently calcareous nodules and fragments derived from the underlying materials occur over nearly all the surface. This has a tendency to make the surface soil calcareous. In many eroded areas the hardpan layer is exposed somewhat irregularly at the surface. In such places, especially in areas under cultivation, sands from the underlying materials have become mixed with the surface soil, also large fragmentary pieces of the hardpan layer which have been broken off by the plow where the hardpan lies at a slight depth. Such areas lie in the vicinity of the Wilson Lake Reservoir. In places where the basalt bedrock outcrops in association with such exposures it is identical with the rock-outcrop phases of the Portneuf soils.

The calcareous hardpan layer varies greatly, ranging from a series of thin sheets to an extreme development of single thick limestone-like layers. In some places, especially where areas join the Portneuf soils, hardpan is almost lacking except for the presence of nodular calcareous fragments. The hardpan is pervious to water and softens under irrigation. Only in extremely shallow places does it interfere with cultivation and crop production.

Nearly all this soil is under cultivation. It comprises a total area of 8,896 acres lying chiefly in one continuous body, in the vicinity of Hazelton and Eden, which follows roughly a northward drainage slope ending in a troughlike channel at Wilson Lake Reservoir and continues westward bordering the lava desert to the north. Along this channel are catchment basins and sink holes, and most of the water disappears through the fissured basalt substratum. However, occasional ponding has caused the soils along the channel to be of somewhat heavier texture. In most places the land is well drained.

As mapped this soil includes a very small area, covering about one-fourth square mile and occurring mainly in sec. 3, T. 10 S., R. 18 E., 2 miles northwest of Hansen Bridge, in which the deeper underlying material consists of loosely organized gravel.

Minidoka silt loam compares favorably with Portneuf silt loam in crop adaptation and yields.

Minidoka silt loam, steep phase.—The steep phase of Minidoka silt loam bears the same relationship to Minidoka silt loam as the

steep phase of Portneuf silt loam does to Portneuf silt loam. In general, it presents a more eroded appearance than the steep phase of Portneuf silt loam, due to exposure of the hardpan layer. The total area is small, and probably about half the land is under cultivation. The largest continuous body lies above the irrigation ditches on the north slope of Skeleton Butte.

MINIDOKA FINE SANDY LOAM

Minidoka fine sandy loam is a well-drained mature upland soil. The surface soil consists of light-brown loose friable fine sandy loam to a depth of about 4 inches. This layer is generally sprinkled with nodules and fragments of the lime-carbonate hardpan or associated materials. Below this and continuing to a depth of about 15 inches the material consists of grayish-brown slightly compacted fine sandy loam which is slightly heavier in texture than the layer above. Between depths of 15 and 30 inches there may be a transitional layer of light-gray highly calcareous cloddy heavy fine sandy loam, containing lime nodules and fragments derived from the underlying calcareous hardpan which lies at a depth of about 30 inches. The hardpan layer consists of alternating layers of firmly cemented hardpan and reddish-brown fine sand extending to a depth of about 43 inches, at which depth the material changes to compact gray fine sand containing calcareous gritty fragmentary materials. At the topmost part of this layer there are very thin layers of calcareous hardpan, and the lime seaming continues downward. The lower part of the subsoil varies in character as does that of Minidoka silt loam.

Areas of this soil occur adjacent to Minidoka silt loam areas in a long narrow strip west of Eden forming a transitional soil between Minidoka silt loam and Minidoka loamy fine sand. The relief and drainage of this soil are similar to Minidoka silt loam. Practically all the land is under cultivation, and crop adaptations and yields are similar to those on the silt loam.

MINIDOKA LOAMY FINE SAND

Like other Minidoka soils, Minidoka loamy fine sand is an upland soil having a well-developed profile. The relief is similar, and the land is well drained. The surface soil to a depth of about 5 inches consists of light-brown loose mellow loamy fine sand containing a small amount of basalt fragments and coarser sand. In most places it contains calcareous nodules and hardpan fragments. Below this layer is a layer of brown fine sandy loam, compacted, of soft or friable cloddy structure, and containing fragmentary calcareous material. The calcareous hardpan layer lies at a depth of about 18 inches and has an average thickness of about 18 inches. It consists of alternating layers of grayish-white iron-stained hardpan sheets and light-gray, tinged with red, fine sand and contains gritty calcareous fragments. Below this the material is compact yellowish-brown loamy fine sand, gritty with calcareous materials.

The soil occurs mainly in a single large body west of Eden, in conjunction with the silt loam, fine sandy loam, and fine sand members of the Minidoka series. A small body is on the east slope of

the butte west of Canyonside School. However, this is not a typical development of the soil as the hardpan layer lies directly on the basalt substratum, as in the rock-outcrop phases of the Portneuf soils, but owing to its inextensive occurrence, it is included with Minidoka loamy fine sand.

As with the loamy fine sand of the Portneuf series, the surface soil of this soil is disturbed by shifting sands especially where areas occur in association with Minidoka fine sand, but in general it contains enough binding material to resist wind action fairly well. With careful cultural practices the same crops can be grown as on the heavier soils though yields may be somewhat reduced. In this respect this soil is identical with Portneuf loamy fine sand. Small undifferentiated wind-disturbed areas of both Minidoka fine sand and Minidoka fine sandy loam are included in mapping.

MINIDOKA FINE SAND

The surface soil of Minidoka fine sand to a depth of about 4 inches consists of light-brown very loose fine sand containing small basalt fragments and a high proportion of coarser sands. It is underlain by slightly compacted reddish-brown loamy fine sand of soft cloddy structure. The calcareous hardpan lies at a depth of about 17 inches and consists of a series of layers of firmly cemented hardpan alternating with loose layers of yellowish-gray fine sand. At a depth of about 30 inches this layer changes to a gritty compacted layer of yellowish-brown loamy fine sand having very thin layers of lime seaming in the upper part.

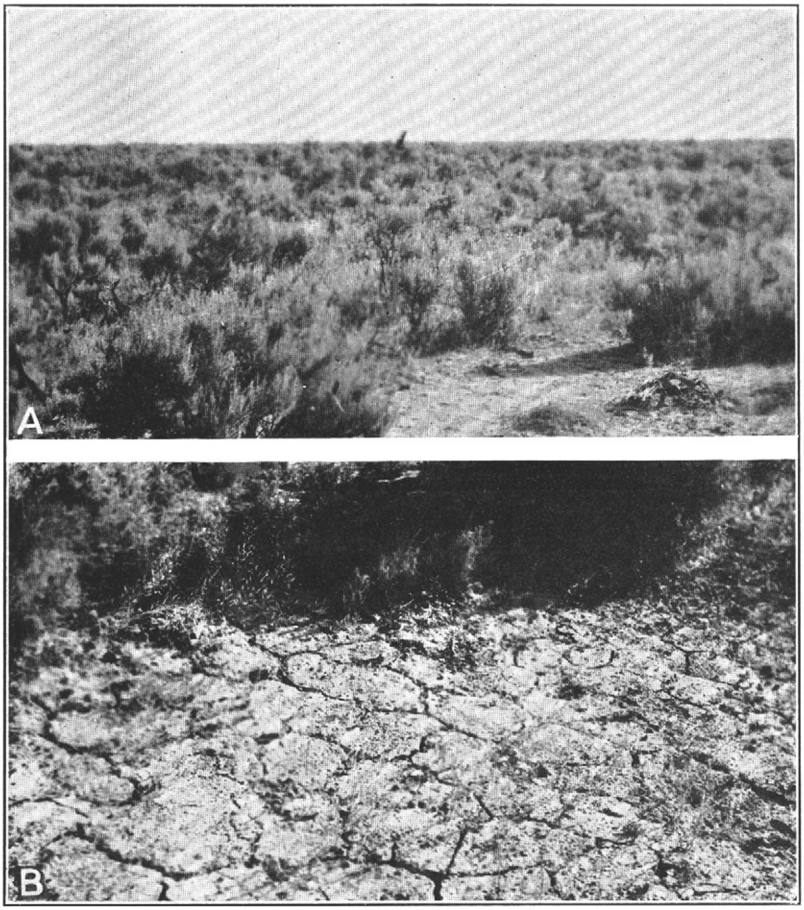
This soil is inextensive. The principal area is about 3½ miles west of Eden and occurs as a narrow strip extending into an area of Minidoka loamy fine sand. Small areas are on the butte west of Canyonside School, but these are not typically developed. Owing to its shifting surface soil only a small part of the land is cultivated. In crop adaptations and limitations this soil is similar to Portneuf fine sand.

As mapped Minidoka fine sand includes a few very small uncultivated hummocky or dunelike areas.

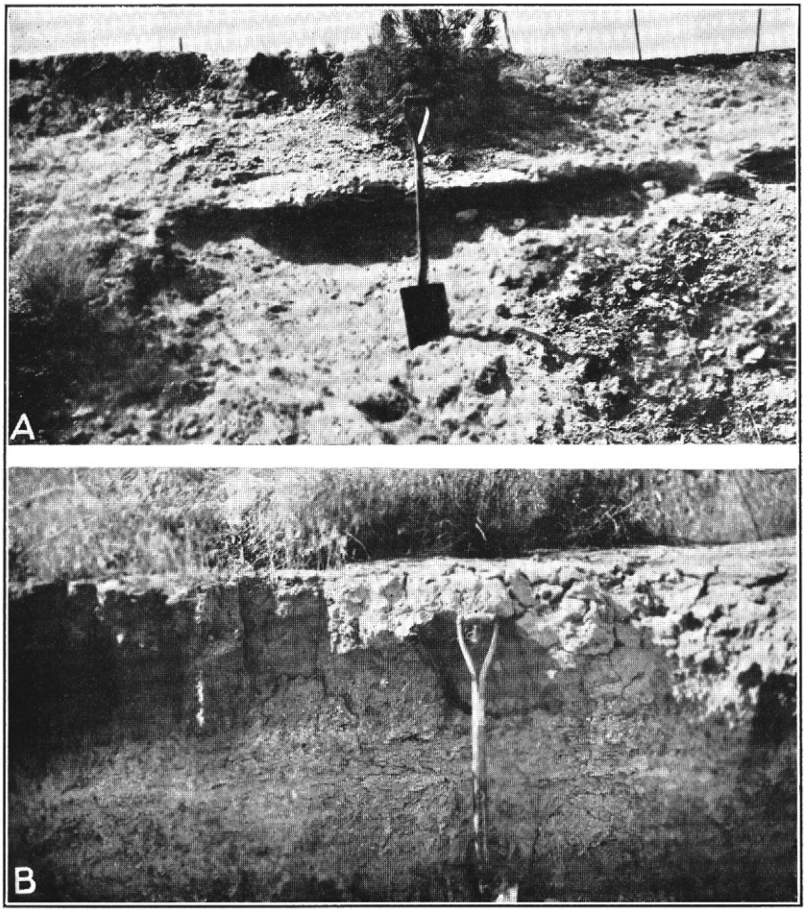
SCAB LAND

Scab land consists of areas in which the surface is predominantly broken by lava sheets or ridges and in which the soil cover is entirely lacking, is thin, or occurs only in small scattered pockets of fine-textured wind-laid materials. Areas of arable soil seldom exceed a few acres in extent, and most of them are utilized only for grazing. Orchard trees have been planted on a few small areas of the deeper soil material in the vicinity of Blue Lakes Bridge.

This type of material is extensive, extending from Snake River to the northern boundary of the area and from east to west a distance of about 18 miles. Smaller but conspicuous areas occupy a part of Wilson Butte and Skeleton Butte in the eastern part. Narrow areas border the Snake River Canyon in the eastern and western parts, and small scattered areas associated with the arable soils are widely distributed throughout the Jerome area, being most numerous in the western and northwestern parts.



A, Native sagebrush vegetation on Portneuf silt loam; B, checked surface crust on Portneuf silt loam



A, Profile of Minidoka silt loam showing layer of firmly cemented lime-carbonate hardpan; B, profile of Minidoka silt loam showing checked surface crust, columnar subsurface horizon, and B horizon of nodular and platy lime accumulation

ROUGH STONY LAND

Rough stony land consists of areas in which the rough or steep relief and the occurrence of outcropping bedrock or fragmental bowlders preclude utilization for cultivated crops. However, part of the land is of some value for grazing.

This type of material occurs in long narrow areas of basaltic cliffs and talus slopes in the Snake River Canyon and in a few very narrow irregular strips along the boundaries of the extensive scab-land areas. Rough stony land is not extensive in the Jerome area. The largest areas occur in the southern part of T. 9 S., Rs. 17 and 18 E.

SOILS AND THEIR INTERPRETATION

The black basalt bedrock substratum underlying all the soils of the Jerome area represents a series of comparatively recent lava flows. The basalt is exposed to a depth of several hundred feet in the Snake River Canyon. It exhibits a series of lava sheets of varying thickness, in many places separated by volcanic breccia and lapilli and burned soil materials. This basalt substratum outcrops more or less frequently over most of the area as a gnarled, knotty, wavelike, blistered, broken, and fissured type of surface flow. Large areas occur in which little or no soil mantle is present. The more continuous areas of this kind extend from the northern boundary of the area and continue as a spur or tongue southward across the area to Snake River, separating the east and west agricultural sections. In places the edges of the flow are marked by abrupt escarpments, and in other places the flow recedes gradually under the areas of soil accumulation. Here and there isolated volcanic buttes rise well above the surrounding territory. Most of these are thinly covered with soil material or are bare at the crest. They probably represent old volcanic vents or craters as places occur where cinders and other volcanic débris are in evidence.

The underlying bedrock has greatly influenced the relief of the area. The wind-borne or loessial parent soil materials of remarkably uniform fine texture, grading from silt to fine sand, have drifted over the bedrock to varying depths. Texturally, the coarser material derived from the basalt substratum has contributed only a small amount of basalt fragments to the soil material in process of its deposition. This is shown mainly in the lower part of the subsoil of unweathered material and in the coarser-textured surface soils which have been recently drifted by the wind. All other material shows evidence of being a wind-laid loessial deposition of foreign origin.

The Jerome area lies in the Snake River Plain which is part of the northwest intermountain region. Under the arid conditions of this region, characterized by a dry atmosphere and a light precipitation, very little accumulation of organic matter has taken place, and the soils are light brown or light grayish brown. The light precipitation has allowed but shallow weathering and leaching, consequently a high amount of mineral elements is retained in the soils.

Owing to the common loessial origin of the parent material, together with low precipitation, ideal upland relief, and areas well drained through well-defined surface channels and fissured bedrock,

the soil-forming process has gone on very uniformly, and the soils are remarkably uniform, very well developed, and mature. A profile shows a very consistent development of leached surface soils, accumulation of lime in the subsoil, and well-defined color and texture horizons.

The typical well-developed profile of the soils of the Jerome area, in their virgin state, may be described as follows:

Horizon A_1, from 0 to about 2½ inches, light-brown friable and smooth material. In the heavier types during dry weather there is a blistered or platelike surface crust less than one-half inch thick, covering blocks of angular geometric design. The crust is fragile, vesicular, and honeycombed. In dry weather the blocks may be lifted out as they break away, with definite demarcation both in color and texture, from the horizon below. This horizon is generally noncalcareous. (Pl. 1, A and B.)

Horizon B_1, from 2½ to 15 inches, light reddish-brown columnar material of heavier texture than the surface material and somewhat compact. (Pl. 2, B.)

Horizon B_2, from 15 to 40 inches, light yellowish-gray or almost grayish-white zone of lime accumulation, very compacted and brittle. Nodular effect, in many places showing light netted pattern of lime seaming or nut structure.

Horizon C, from 40 to 72 inches, the light yellowish-brown or grayish-brown parent material which in some places is slightly compacted, but in most places is single grained, smooth, and mellow.

The Portneuf and Minidoka series are represented in the above group and, with the exception of a single inextensive development of the Winchester soils, include all the soils in the area. The Minidoka soils differ from the Portneuf in that in the Minidoka soils the zone of lime accumulation has developed into a zone of firmly cemented hardpan layers or sheets lying one above the other (pl. 2, A), alternating with layers of looser and gritty sandy materials or softly cemented with them. Both the individual sheets and the total layer are of variable thickness. Looser uncemented materials underlie this horizon.

Results of determinations of the moisture equivalents of members of the Portneuf and Minidoka series are given in Table 3. These determinations were made in the laboratories of the University of Idaho, Moscow, Idaho, and are submitted by G. R. McDole, soil technologist.

TABLE 3.—*Moisture equivalents of soils in the Jerome area, Id*

Sample No.	Soil type	Location	Depth in inches	Description	
541334	Portneuf fine sand, rock-outcrop phase.	NW. ¼ NE. ¼ sec. 32, T. 8 S., R. 16 E.	0–14	Loose, light-brown fine sand, with basalt fragments and coarser sands.	Un
541335	do	do	14–28	Yellowish-brown fine sandy loam; breaks up into rough gritty clods which break readily.	
541336	do	do	28–46	Light reddish-brown, mottled with white, plastic fine or very fine sandy loam; compacted, but crumbles readily; highly calcareous, having heavy lime seams.	
541337	do	do	46–72	Light yellowish-brown or yellowish-gray, tinged with red, fine sand or loamy fine sand; gritty, single grained, calcareous.	
541330	Portneuf loamy fine sand	SW. ¼ NE. ¼ sec. 36, T. 7 S., R. 16 E.	0–12	Light-brown fairly loose and friable loamy fine sand, containing some basalt fragments and coarser sand.	Gen
541331	do	do	12–24	Yellowish-brown compact rather heavy fine sandy loam; breaks into clods.	
541332	do	do	24–40	Very light yellowish-brown or yellowish-gray heavy very fine sandy loam; compact and brittle.	
541333	do	do	40–72	Light yellowish-brown very fine sandy loam; calcareous; some lime seaming at surface.	
541326	Portneuf fine sandy loam	SE. ¼ SE. ¼ sec. 26, T. 7 S., R. 16 E.	0– 8	Light-brown mellow fine sandy loam	Gen
541327	do	do	8–20	Yellowish-brown heavy fine sandy loam, plastic when wet.	
541328	do	do	20–32	Light yellowish-gray plastic heavy fine sandy loam; compact; somewhat irregular nut structure.	
541329	do	do	32–72	Light yellowish-brown or light grayish-brown fine sandy loam or loamy fine sand; somewhat compact but breaks to mellow material; lime seaming at surface.	
541301	Portneuf silt loam	NE. ¼ SE. ¼ sec. 17, T. 10 S., R. 20 E.	0–2½	Light-brown very fine sandy loam, containing a high proportion of very fine sand; friable and smooth but compacted into tile-shaped blocks; fragile; platy; vesicular, honeycombed, thin surface crust.	Unc
541302	do	do	2½–15	Pale-brown heavy silt loam, very smooth and highly plastic; columnar structure.	
541303	do	do	15–25	Very light-gray, almost grayish-white, silt loam; faintly irregular nut structure; compact but breaks into clods; highly calcareous.	

[1] Samples containing hardpan were ground to pass through a 2-millimeter screen.

TABLE 3.—*Moisture equivalents of soils in the Jerome area, Idaho*—C

Sample No.	Soil type	Location	Depth in inches	Description	
541304	Portneuf silt loam	NE. 1/4 SE. 1/4 sec. 17, T. 10 S., R. 20 E.	25–48	Grayish-white very compact silty clay loam; horizontal cleavage, irregular nut structure, and containing lime nodules; highly calcareous.	----
541305	do	do	48–72	Yellowish-gray, somewhat cream-colored, very fine sandy loam; smooth, mellow, and floury; highly calcareous.	----
541311	Minidoka fine sand	NW. 1/4 SE. 1/4 sec. 36, T. 9 S., R. 18 E.	0–4	Light-brown fine sand; loose and containing some coarse sand; small basalt fragments present.	Slig
541312	do	do	4–17	Reddish-brown slightly compact loamy fine sand; slight honeycombed perforations; tendency to columnar structure.	----
541313	do	do	17–30	Grayish-white calcareous hardpan layers alternating with loose layers of yellowish-gray fine sand.	----
541314	do	do	30–36	Light-gray, yellowish, or cream-colored loamy fine sand with slight netted lime seaming; compact yet friable under pressure.	----
541315	do	do	36–54	Light yellowish-gray loamy fine sand with hard calcareous lateral seamings or hardpan laminations; gritty.	----
541316	do	do	54–72	Same material and color as above layer, but lacks calcareous laminations; compact, but friable where loosened.	----
541317	Minidoka loamy fine sand	SE. 1/4 NE. 1/4 sec. 29, T. 9 S., R. 19 E.	0–5	Loose, friable, light-brown loamy fine sand, containing coarser sand and basalt fragments.	Und
541318	do	do	5–18	Brown fine sandy loam, cloddy and compact, but very friable on pressure.	----
541319	do	do	18–36	Alternating layers of grayish-white calcareous hardpan and yellowish-gray, stained with red, fine sand and gritty material; red iron stains on hardpan.	----
541320	do	do	36–72	Fairly compact layer of light yellowish-brown loamy fine sand and gritty material.	----
541321	Minidoka fine sandy loam	NW. 1/4 NW. 1/4 sec. 6, T. 10 S., R. 19 E.	0–4	Loose, mellow, grayish-brown fine sandy loam containing basalt fragments and coarse sand.	Gen
541322	do	do	4–15	Light-brown, tinged with red, fine sandy loam; material heavier than in layer above; breaks into large clods which crumble readily.	----

541323	do	do	15–30	Light-gray heavy very fine sandy loam, which breaks into hard clods, crumbling under pressure.	
541324	do	do	30–43	Alternating layers of reddish-brown fine sand and calcareous hardpan.	
541325	do	do	43–72	Yellowish-gray or greenish-drab loamy fine sand and fragmentary calcareous material; some thin hardpan layers at surface.	
541306	Minidoka silt loam	NE ¼ SE. ¼ sec. 1, T. 10 S., R. 20 E.	0– 3	Light-brown silt loam with same development as in Portneuf silt loam.	Unc
541307	do	do	3–14	Brown heavy silt loam or silty clay loam with same development as in Portneuf silt loam.	
541308	do	do	14–34	Very light-gray calcareous hardpan layer with rust-red iron stains, alternating with grayish-brown or reddish-brown varitextured sandy material, mainly fine sand, containing many lime concretions.	
541309	do	do	34–60	Reddish-gray or brownish-gray fragmentary calcareous materials showing some abrasion; rather loosely organized with finer gritty material.	
541310	do	do	60–72	Same as above, but materials coarser; high proportion of very fine sand.	

SUMMARY

The Jerome area comprises the irrigated agricultural land of Jerome County, and lies north of and contiguous to Snake River in the southernmost part of its course across the Snake River Plain of southern Idaho. The total extent of the area is 271 square miles of 173,440 acres.

The area surveyed occupies a well-drained upland region of generally rolling plateau or benchlike relief. The average elevation is about 4,000 feet above sea level.

The climate is characterized by a rather wide range in temperature, a dry atmosphere, and low annual precipitation. In general it is intermediate between the extremes occurring in the Snake River Plain. The average annual precipitation is less than 9 inches, and irrigation is necessary for successful crop production.

Development in the area began in 1907 with the opening of the Carey Act project by the Northside Twin Falls Land & Water Co. In 1920 the population of Jerome County was 5,729. Jerome, with a population of 1,759 in 1920, is the largest town in the area and the county seat of Jerome County.

The area is served by the Oregon Short Line Railroad of the Union Pacific system. The roads are fair. As there is only a small local demand for farm products, they are shipped chiefly to Pacific coast and mid-west markets.

The main cash crops are wheat, beans, potatoes, sugar beets, and alfalfa and clover seeds. Alfalfa for hay, one of the most extensive crops grown, is fed locally to cattle and sheep.

The soils of the area are of wind-laid or loessial origin, all having mature, well-developed profiles. Three soil series, the Portneuf, Minidoka, and Winchester, are represented. Eight soil types, seven phases of types, and two classes of miscellaneous materials are mapped.

The Portneuf soils have light-brown surface soils overlying a light-gray very compact zone of lime accumulation. The lower part of the subsoil is smooth, floury, and of light grayish-brown color. It overlies a basalt substratum. Portneuf silt loam is the most extensive and most important agricultural soil in the area. The Minidoka soils differ from the Portneuf in that the zone of lime accumulation has developed into cemented hardpan sheets. The Winchester soils are inextensive and unimportant.

[Public Resolution No. 9]

JOINT RESOLUTION Amending public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, "providing for the printing annually of the report on field operations of the Division of Soils, Department of Agriculture."

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That public resolution numbered eight, Fifty-sixth Congress, second session, approved February twenty-third, nineteen hundred and one, be amended by striking out all after the resolving clause and inserting in lieu thereof the following:

That there shall be printed ten thousand five hundred copies of the report on field operations of the Division of Soils, Department of Agriculture, of which one thousand five hundred copies shall be for the use of the Senate, three thousand copies for the use of the House of Representatives, and six thousand copies for the use of the Department of Agriculture: *Provided*, That in addition to the number of copies above provided for there shall be printed, as soon as the manuscript can be prepared, with the necessary maps and illustrations to accompany it, a report on each area surveyed, in the form of advance sheets, bound in paper covers, of which five hundred copies shall be for the use of each Senator from the State, two thousand copies for the use of each Representative for the congressional district or districts in which the survey is made, and one thousand copies for the use of the Department of Agriculture.

Approved March 14, 1904.

[On July 1, 1901, the Division of Soils was reorganized as the Bureau of Soils, and on July 1, 1927, the Bureau of Soils became a unit of the Bureau of Chemistry and Soils.]

Areas surveyed in Idaho, shown by shading

U. S. GOVERNMENT PRINTING OFFICE: 1931

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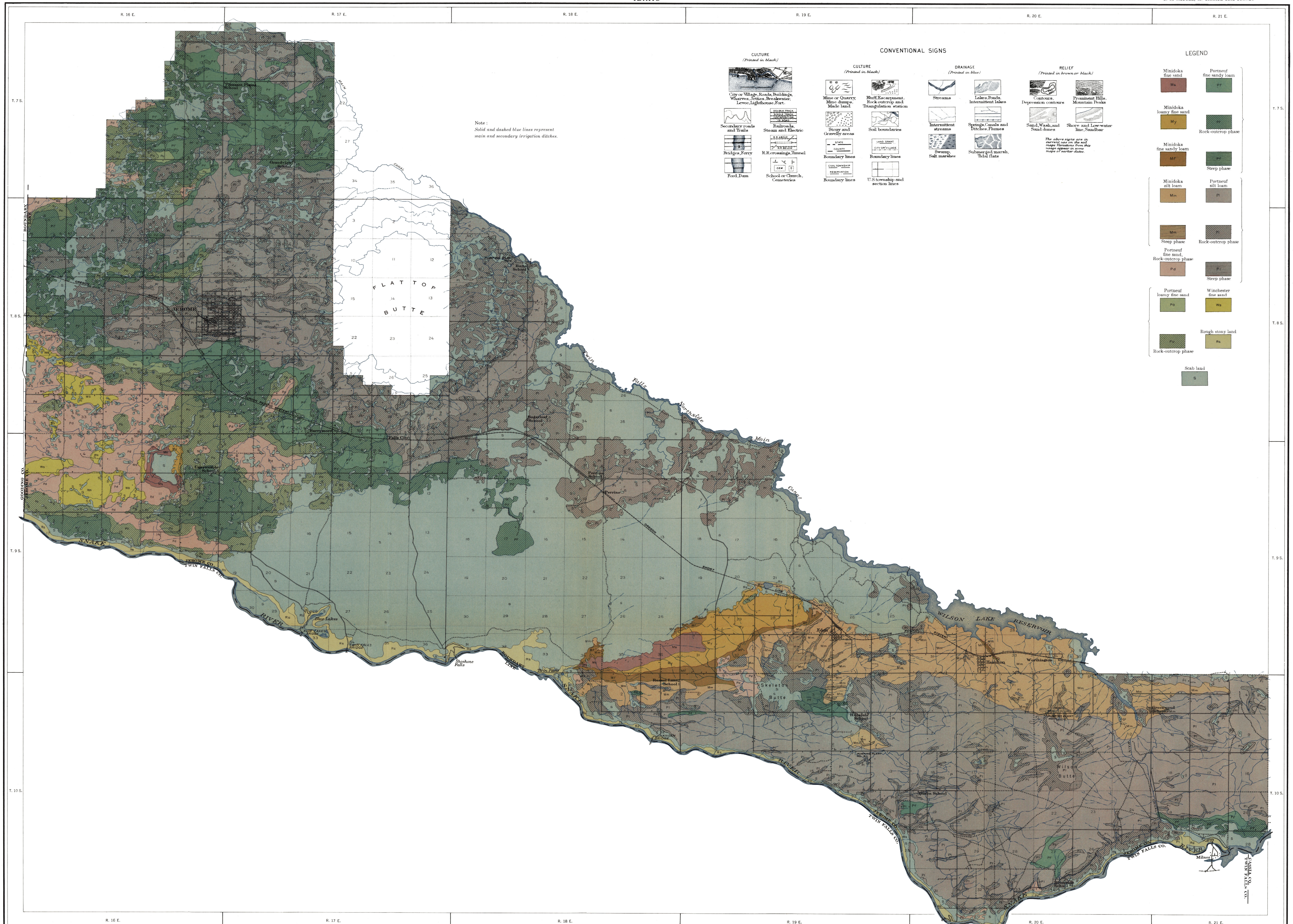
U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF CHEMISTRY AND SOILS
HENRY G. KNIGHT, CHIEF
A. G. McCALL, CHIEF, SOIL INVESTIGATIONS
CURTIS F. MARBUT, IN CHARGE SOIL SURVEY

SOIL MAP
JEROME AREA
IDAHO

UNIVERSITY OF IDAHO
COLLEGE OF AGRICULTURE AND
AGRICULTURAL EXPERIMENT STATION
E. J. IDDINGS, DEAN AND DIRECTOR
G. R. McDOLE, IN CHARGE SOIL SURVEY



Macy H. Lapham, Inspector, District 5.
Soils surveyed by E. N. Poulson, U. S. Department of Agriculture, in charge, and J. A. Thompson, University of Idaho.

BASE MAP IN PART FROM SURVEYS OF
TWIN FALLS NORTHSIDE LAND AND WATER COMPANY

1 ½ 0 1 2 3 4 Miles
Scale 1 inch-1 mile

Litho. A. Hoen & Co., Inc.

Field Operations
Bureau of Chemistry and Soils
1927